

WHAT IS CLAIMED IS:

1           1.       A method for transmitting packets between a plurality of end user systems  
2       and one server, comprising:  
3           in response to receiving an initial packet from an initiating end user system,  
4       communicating with the server to establish a network session and obtain a network  
5       session identifier;  
6           adding an entry to a data structure associating a connection with the end user  
7       system and the network session identifier;  
8           in response to receiving a data packet from one transmitting end user system,  
9       processing the data structure to determine the network session identifier associated with  
10      the connection to the transmitting end user system; and  
11           communicating the data packet from the transmitting end user system to the  
12      server using the network session corresponding to the network session identifier.

1           2.       The method of claim 1, further comprising:  
2           encapsulating the data packet from the transmitting end user system with a header  
3       including the determined network session identifier, wherein the encapsulated data  
4       packet is transmitted to the server.

1           3.       The method of claim 1, further comprising:  
2           in response to receiving a data packet from the server, determining one network  
3       session identifier included with the received data packet;  
4           determining from the data structure the connection to one end user system  
5       associated with the determined network session identifier; and  
6           transmitting the data packet on the determined connection to one end user system.

1           4.       The method of claim 3, wherein the network session identifier is included  
2       within a header encapsulating the data packet from the server, further comprising:

1 removing the header and network session identifier from the data packet, wherein  
2 the extracted data packet is transmitted on the determined connection.

1 5. The method of claim 4, wherein the data packet received from the end  
2 user system is encapsulated in a Point-to-Point Protocol (PPP) packet and the connection  
3 with the end user system comprises a standard telephone line and wherein the data packet  
4 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header  
5 including the network session identifier of the PPPOE network session over which the  
6 PPPOE packet was transmitted.

1 6. The method of claim 1, wherein one network session identifier is obtained  
2 from the server for each connection to one end user computer.

1 7. The method of claim 1, wherein the server comprises an Internet Service  
2 Provider (ISP) server and wherein the end user computer communicates with the ISP  
3 server to access a network through the ISP server.

1 8. A method for transmitting packets between a plurality of end user systems  
2 and one server, comprising:  
3 in response to receiving an initial packet from an initiating end user system,  
4 assigning a network address to the end user system;  
5 adding an entry to a data structure associating a connection with the end user  
6 system and the network address assigned to the end user system;  
7 determining one network session identifier of a network session on which data  
8 packets from multiple end user systems are transmitted to the server; and  
9 communicating the data packet from the transmitting end user system to the  
10 server using the network session corresponding to the network session identifier.

1           9.     The method of claim 8, further comprising:  
2           encapsulating the data packet from the transmitting end user system with a header  
3           including the determined network session identifier, wherein the encapsulated data  
4           packet is transmitted to the server.

1           10.    The method of claim 1, further comprising:  
2           in response to receiving a data packet from the server, determining the network  
3           address included with the received data packet;  
4           determining from the data structure the connection to one end user system  
5           associated with the determined network address;  
6           transmitting the data packet on the determined connection to one end user system.

1           11.    The method of claim 10, wherein the network session identifier is  
2           included within a header encapsulating the data packet from the server, further  
3           comprising:  
4           removing the header and network session identifier from the data packet, wherein  
5           the extracted data packet is transmitted on the determined connection.

1           12.    The method of claim 11, wherein the network address comprises an  
2           Internet Protocol (IP) address, wherein the data packet received from the end user system  
3           is encapsulated in a Point-to-Point Protocol (Packet) and wherein the connection between  
4           the end user system comprises a standard telephone line and wherein the data packet  
5           from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header  
6           including the network session identifier of the PPPOE network session over which the  
7           PPPOE packet was transmitted.

1           13.    The method of claim 1, wherein the operations of assigning the network  
2           address, adding the entry to the data structure, determining one network session identifier

3 and communicating the data packet are performed in a system separate from the server  
4 and terminating on one end of the connections to the end user systems.

1           14.    A system for transmitting packets between a plurality of end user systems  
2 and one server on a network, comprising:  
3           a processing unit;  
4           a plurality of connections capable of being used to connect with end user systems,  
5 wherein the plurality of connections are in data communication with the processing unit;  
6           an adaptor capable of communicating with the server over the network, wherein  
7 the adaptor is in data communication with the processing unit;  
8           program code that when executed by the processing unit causes the processing  
9 unit to perform:  
10               (i) in response to receiving an initial packet from an initiating end user  
11 system, communicating with the server to establish a network session and obtain a  
12 network session identifier;  
13               (ii) adding an entry to a data structure associating a connection with the  
14 end user system and the network session identifier;  
15               (iii) in response to receiving a data packet from one transmitting end user  
16 system, processing the data structure to determine the network session identifier  
17 associated with the connection to the transmitting end user system; and  
18               (iv) communicating the data packet from the transmitting end user system  
19 to the server using the network session corresponding to the network session  
20 identifier.

1           15.    The system of claim 14, wherein the program code when executed causes  
2 the processing unit to further perform:  
3           encapsulating the data packet from the transmitting end user system with a header  
4 including the determined network session identifier, wherein the encapsulated data  
5 packet is transmitted to the server.

1           16.    The system of claim 14, wherein the program code when executed causes  
2   the processing unit to further perform:  
3           in response to receiving a data packet from the server, determining one network  
4   session identifier included with the received data packet;  
5           determining from the data structure the connection to one end user system  
6   associated with the determined network session identifier; and  
7           transmitting the data packet on the determined connection to one end user system.

1           17.    The system of claim 16, wherein the network session identifier is included  
2   within a header encapsulating the data packet from the server, wherein the program code  
3   when executed causes the processing unit to further perform:  
4           removing the header and network session identifier from the data packet, wherein  
5   the extracted data packet is transmitted on the determined connection.

1           18.    The system of claim 17, wherein the data packet received from the end  
2   user system is encapsulated in a Point-to-Point Protocol (PPP) packet and the connection  
3   with the end user system comprises a standard telephone line and wherein the data packet  
4   from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header  
5   including the network session identifier of the PPPOE network session over which the  
6   PPPOE packet was transmitted.

1           19.    The system of claim 14, wherein one network session identifier is  
2   obtained from the server for each connection to one end user computer.

1           20.    The system of claim 14, wherein the server comprises an Internet Service  
2   Provider (ISP) server and wherein the end user computer communicates with the ISP  
3   server to access a network through the ISP server.

1           21.     A system for transmitting packets between a plurality of end user systems  
2     and one server on a network, comprising:  
3           a processing unit;  
4           a plurality of connections capable of being used to connect with end user systems,  
5     wherein the plurality of connections are in data communication with the processing unit;  
6           an adaptor capable of communicating with the server over the network, wherein  
7     the adaptor is in data communication with the processing unit;  
8           program code that when executed by the processing unit causes the processing  
9     unit to perform:  
10           (i) in response to receiving an initial packet from an initiating end user  
11          system, assigning a network address to the end user system;  
12           (ii) adding an entry to a data structure associating a connection with the  
13          end user system and the network address assigned to the end user system;  
14           (iii) determining one network session identifier of a network session on  
15          which data packets from multiple end user systems are transmitted to the server;  
16          and  
17           (iv) communicating the data packet from the transmitting end user system  
18          to the server using the network session corresponding to the network session  
19          identifier.

1           22.     The system of claim 21, wherein the program code when executed causes  
2     the processing unit to further perform:  
3           encapsulating the data packet from the transmitting end user system with a header  
4     including the determined network session identifier, wherein the encapsulated data  
5     packet is transmitted to the server.

1           23.     The system of claim 21, wherein the program code when executed causes  
2     the processing unit to further perform:

3           in response to receiving a data packet from the server, determining the network  
4 address included with the received data packet;  
5           determining from the data structure the connection to one end user system  
6 associated with the determined network address;  
7           transmitting the data packet on the determined connection to one end user system.

1           24.     The system of claim 23, wherein the network session identifier is included  
2 within a header encapsulating the data packet from the server, wherein the program code  
3 when executed causes the processing unit to further perform:  
4           removing the header and network session identifier from the data packet, wherein  
5 the extracted data packet is transmitted on the determined connection.

1           25.     The system of claim 24, wherein the network address comprises an  
2 Internet Protocol (IP) address, wherein the data packet received from the end user system  
3 is encapsulated in a Point-to-Point Protocol (Packet) and wherein the connection between  
4 the end user system comprises a standard telephone line and wherein the data packet  
5 from the server is encapsulated in a PPP over Ethernet (PPPOE) packet having a header  
6 including the network session identifier of the PPPOE network session over which the  
7 PPPOE packet was transmitted.

1           26.     An article of manufacture for transmitting packets between a plurality of  
2 end user systems and one server, wherein the article of manufacture causes operations to  
3 be performed, the operations comprising:  
4           in response to receiving an initial packet from an initiating end user system,  
5 communicating with the server to establish a network session and obtain a network  
6 session identifier;  
7           adding an entry to a data structure associating a connection with the end user  
8 system and the network session identifier;

9           in response to receiving a data packet from one transmitting end user system,  
10   processing the data structure to determine the network session identifier associated with  
11   the connection to the transmitting end user system; and  
12           communicating the data packet from the transmitting end user system to the  
13   server using the network session corresponding to the network session identifier.

1           27.    The article of manufacture of claim 26, wherein the operations further  
2   comprise:  
3           encapsulating the data packet from the transmitting end user system with a header  
4   including the determined network session identifier, wherein the encapsulated data  
5   packet is transmitted to the server.

1           28.    The article of manufacture of claim 26, wherein the operations further  
2   comprise:  
3           in response to receiving a data packet from the server, determining one network  
4   session identifier included with the received data packet;  
5           determining from the data structure the connection to one end user system  
6   associated with the determined network session identifier; and  
7           transmitting the data packet on the determined connection to one end user system.

1           29.    The article of manufacture of claim 28,, wherein the network session  
2   identifier is included within a header encapsulating the data packet from the server,  
3   further comprising:  
4           removing the header and network session identifier from the data packet, wherein  
5   the extracted data packet is transmitted on the determined connection.

1           30.    The article of manufacture of claim 29, wherein the data packet received  
2   from the end user system is encapsulated in a Point-to-Point Protocol (PPP) packet and  
3   the connection with the end user system comprises a standard telephone line and wherein



4 the data packet from the server is encapsulated in a PPP over Ethernet (PPPOE) packet  
5 having a header including the network session identifier of the PPPOE network session  
6 over which the PPPOE packet was transmitted.

1 31. The article of manufacture of claim 26, wherein one network session  
2 identifier is obtained from the server for each connection to one end user computer.

1 32. The article of manufacture of claim 26, wherein the server comprises an  
2 Internet Service Provider (ISP) server and wherein the end user computer communicates  
3 with the ISP server to access a network through the ISP server.

1 33. An article of manufacture for transmitting packets between a plurality of  
2 end user systems and one server, wherein the article of manufacture causes operations to  
3 be performed, the operations comprising:  
4 in response to receiving an initial packet from an initiating end user system,  
5 assigning a network address to the end user system;  
6 adding an entry to a data structure associating a connection with the end user  
7 system and the network address assigned to the end user system;  
8 determining one network session identifier of a network session on which data  
9 packets from multiple end user systems are transmitted to the server; and  
10 communicating the data packet from the transmitting end user system to the  
11 server using the network session corresponding to the network session identifier.

1 34. The article of manufacture of claim 33, wherein the operations further  
2 comprise:  
3 encapsulating the data packet from the transmitting end user system with a header  
4 including the determined network session identifier, wherein the encapsulated data  
5 packet is transmitted to the server.

1           35.     The article of manufacture of claim 33, wherein the operations further  
2     comprise:  
3           in response to receiving a data packet from the server, determining the network  
4     address included with the received data packet;  
5           determining from the data structure the connection to one end user system  
6     associated with the determined network address;  
7           transmitting the data packet on the determined connection to one end user system.

1           36.     The article of manufacture of claim 35, wherein the network session  
2     identifier is included within a header encapsulating the data packet from the server,  
3     further comprising:  
4           removing the header and network session identifier from the data packet, wherein  
5     the extracted data packet is transmitted on the determined connection.

1           37.     The article of manufacture of claim 36, wherein the network address  
2     comprises an Internet Protocol (IP) address, wherein the data packet received from the  
3     end user system is encapsulated in a Point-to-Point Protocol (Packet) and wherein the  
4     connection between the end user system comprises a standard telephone line and wherein  
5     the data packet from the server is encapsulated in a PPP over Ethernet (PPPOE) packet  
6     having a header including the network session identifier of the PPPOE network session  
7     over which the PPPOE packet was transmitted.

1           38.     The article of manufacture of claim 33, wherein the operations of  
2     assigning the network address, adding the entry to the data structure, determining one  
3     network session identifier and communicating the data packet are performed in a system  
4     separate from the server and terminating on one end of the connections to the end user  
5     systems